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Syracuse University

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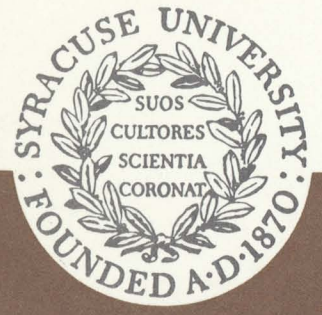

SYSTEMS AND INFORMATION SCIENCE
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ON THE BENEFACTIVE FEATURE IN TRANSITIVITY

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ABSTRACT

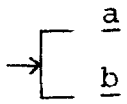
An elaboration on the transitivity system network introduced by M. A. K. Halliday is developed. This extension consists of a separate feature system network for the participant role of "beneficiary". The formulation of the proposed grammar rules to conjoin this network and Halliday's is facilitated by building up the transitivity network to describe "systemically" and uniquely each type of benefactive and range clause presented by Halliday. Systemic descriptions of these clauses are given as examples throughout the discussion.

ACKNOWLEDGEMENT

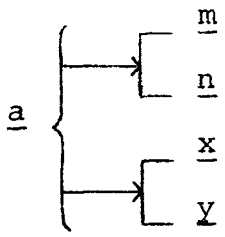
I wish to thank Professor Edward F. Storm for his assistance.

For a given English clause several distinct structural analyses may be determined with respect to grammar and linear order [2]. As advanced by Halliday [1], a further analysis dependent upon the transitivity of the major clause may rule out meaningless analyses by consideration of the roles of the clause constituents. Halliday develops a transitivity network of systems characterizing the major clause, which yields a systemic description by means of a selection of features. These features involve type of process, participants in this process, and attributes and circumstances of the participants and process. With such a network, a proposed analysis may enter any "feature state" for determination of compatability of roles with grammatical structure elements. This requires that each clause constituent have associated with it a set of transitivity features that are consistent with its possible structural roles in clauses.

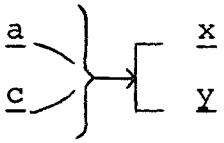
Halliday's transitivity network uniquely catagorizes, by features, nine basic clause types which involve the process and the roles: actor, goal, initiator, attribute and attribuant. This system network is diagrammed below, where



denotes an "or" selection of features,

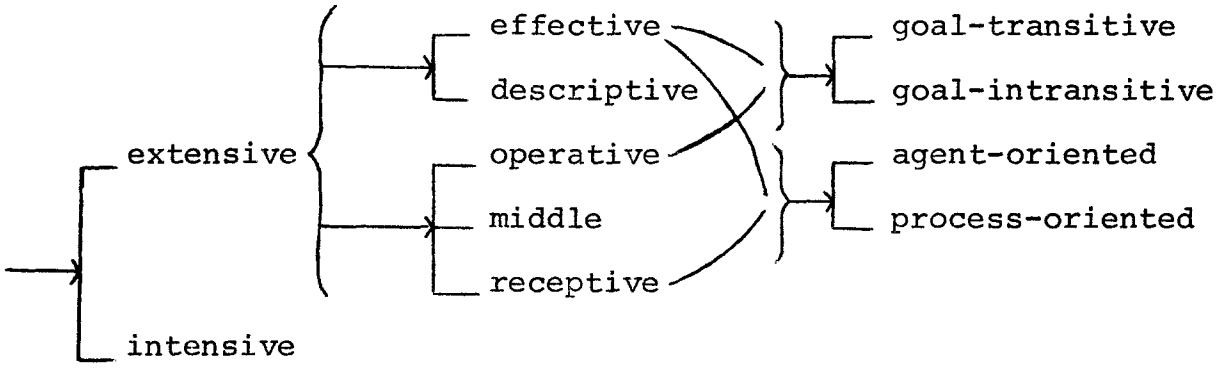


denotes an "and" selection of systems, and



denotes a compound entry to a system.

Here is Halliday's basic transitivity system:



A clause has features "extensive" when the process is action ((i) *she washed the clothes*) and "intensive" when it is ascription ((iv) *she looked happy*). A more delicate analysis of an extensive clause is concerned with the distinction between an action which is directed (effective) as in (ii) *the clothes were washed*, and non-directed (descriptive) as in (iii) *the prisoners marched*; and with whether the predicator is active (operative) as in (i), or passive (receptive) as in (vi) *the prisoners were marched*. The

feature "middle" is associated with clauses that have as effective subjects both goal and actor ((vii) *she washed (sc. herself)*), or in the case of descriptive, subjects which are both initiator and actor as in (iii). The third order of delicacy is involved with the goal-transitivity of an effective, operative clause and the characterization of process in an effective, receptive clause. Thus (i) has feature "goal-transitive" since *the clothes* is a goal complement, and (viii) *she washed (sc. the clothes)* has feature "goal-intransitive". In the case of an effective, receptive clause, a process-oriented clause would be (ix) *the clothes washed (easily)* and an agent-oriented one would be (ii). Finally, an example of a descriptive, operative clause is (v) *he marched the prisoners*.

A new feature "benefactive" would accompany any clause which has a "beneficiary" participant like the indirect object *John* in *he gave John a cup of coffee*. Similarly, the "range" feature would correspond to a circumstantial element of the process called "range", such as *the mountain* in *he climbed the mountain*. The range may be cognate, like *song* in *she sang a song*, and may appear in descriptive clauses with neutral verbs like *have* and *take* (*bath* is the cognate range in *no bath can be taken after midnight*). A cognate range can be an immediate but general consequence of the process, or a nominalization of the process (see Halliday [1] for discussion of cognate range). Some effective clauses with cognate range have only a superficial beneficiary. In *he gave the paint a stir*, the action is directed with *the paint* as goal and *a stir*

as range.

Halliday proposes that these benefactive and range features be present whenever the corresponding roles occur, in some structural element, in the context of transitivity. One of the purposes of this paper is to differentiate between beneficiary or range as complement and as subject, and to expand the transitivity network by the addition of an extensive collection of new features to precede, in order of delicacy, features such as "beneficiary-transitive". Thus the proposed nine basic clause types will be classified further with the addition of these new features which are dependent upon a more delicate analysis of the relationships among process, actor, goal, range and beneficiary.

If an entire feature network is constructed for the participant role "beneficiary", then the expanded transitivity network mentioned above could be extended further. It would include all possible beneficiary feature combinations that occur with the transitivity selections denoting the presence of a beneficiary in some structural form. Clearly the extent of the resulting project demands a more efficient method for the system network representation of clauses involving benefactive related features. Thus it is necessary to keep the constructed beneficiary network independent of the expanded transitivity network, and to compile a set of rules which indicate the compatibility of sub-parts of the two systems. The form these rules should take is clear since the expansion of the transitivity network systematically

specifies under what conditions and in what structural form the beneficiary role appears in the nine basic clauses.

Before the expanded transitivity network can be presented, it is necessary to describe the notation to be used. Indentation implies a higher order of delicacy of the preceding feature, dotted line connection denotes simultaneous system networks, and solid line connection denotes an "or" selection of systems. Excluding its third order of delicacy which will be the origin of the transitivity network revision, Halliday's diagram becomes:

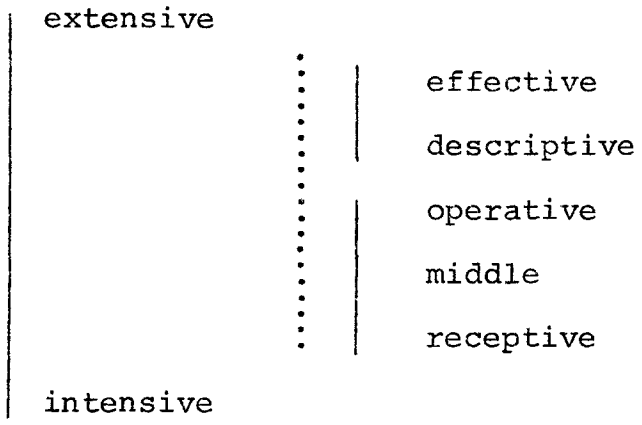
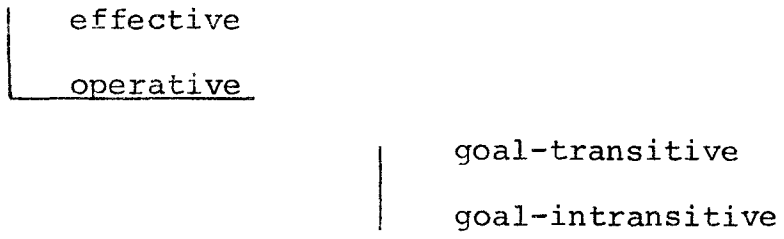


figure 0

For the compound entry features a separate diagram is used with the notation demonstrated below:



When an example clause follows immediately below a feature as in fig. 2, that feature and all preceding it in order of delicacy comprise the selection expression for the clause.

The first step in the transitivity network expansion is to reconsider the further analysis of an effective, operative clause. A distinction is made between effective, operative clauses that are or are not capable of having range complements as diagrammed respectively below:

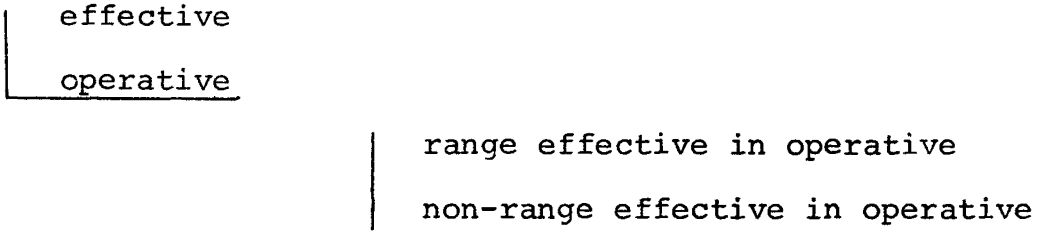


figure 1

In fig. 2, a range effective type can be either range-transitive with the option of having a goal complement (*he charged (John) five shillings* is range-transitive with range complement *five shillings*, and may be goal-transitive with goal complement *John*) or range-intransitive simultaneous with a feature indicating whether or not the predicator is capable of having a goal complement (goal effective, non-goal effective respectively). If the range-intransitive clause is goal effective, it has a "goal-transitive" option (*he charged (John)* is range-intransitive, goal effective, and may be goal-transitive with goal complement *John*); if it is non-goal effective, this usually indicates that its range effective

feature implies that the optional range is cognate (*he gave (a stir)* is range-intransitive lacking the range complement *a stir*; in this context it cannot have a goal complement such as *the paint* and is thus non-goal effective).

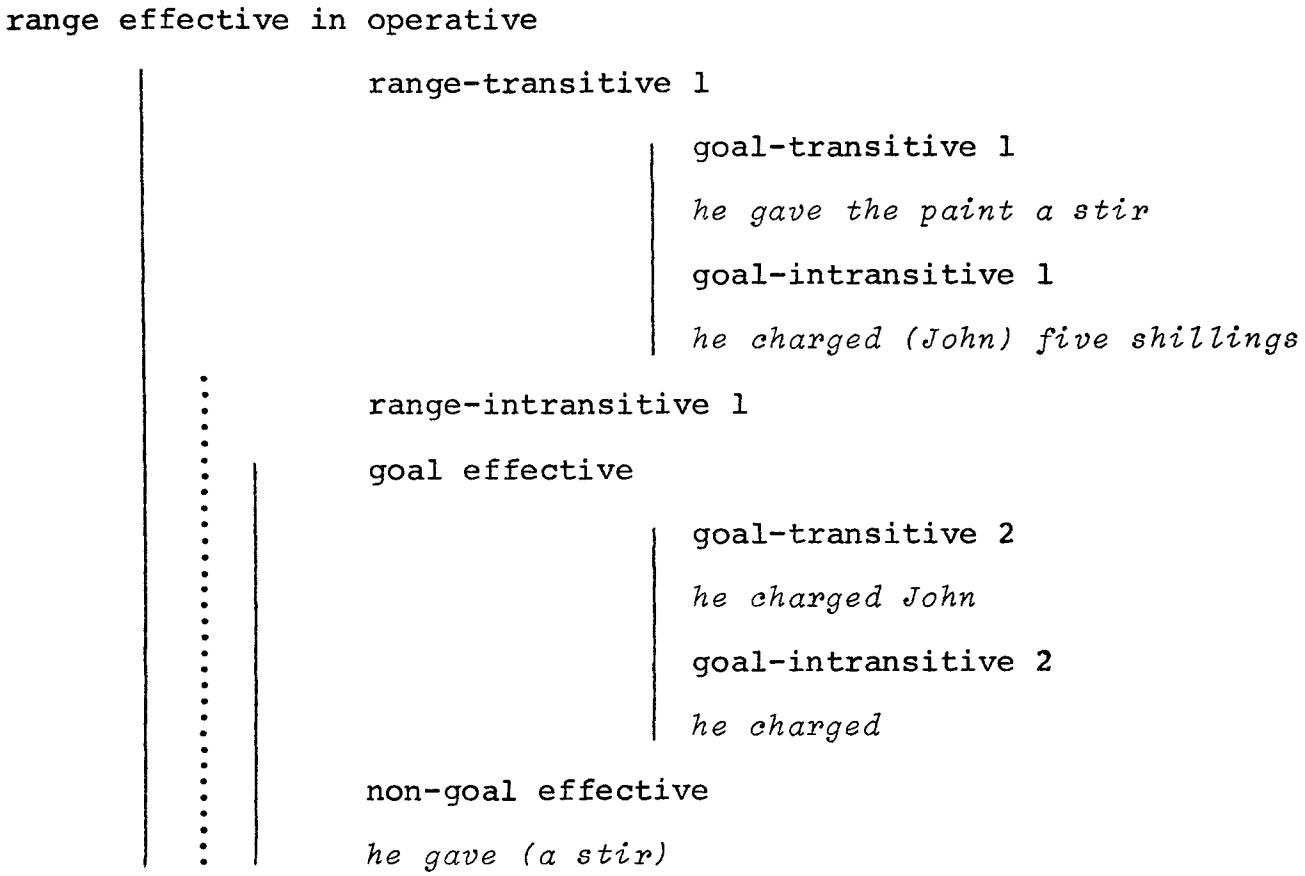


figure 2

The purpose of the elaborate system is, for example, to incorporate a distinction between the clauses:

(a) she washed the clothes

(b) she charged John (five shillings).

Both (a) and (b) are effective, goal-transitive clauses with goal complements *the clothes* and *John*. Also, both are without range complements, but (b) is capable of having such a complement, i.e., *five shillings*. Thus (b) will be assigned the feature "range-intransitive" and (a) will not have this feature since it can never be range-transitive. However, "goal-transitive", for instance, will be a feature assigned even if the clause in question cannot be revised to a goal-intransitive one. This latter information will be present in a more delicate analysis of the clause. The transitivity features are numbered as a shorthand notation. For example, "range-transitive 1" denotes "range-transitive in a clause which is range effective in operative".

As in fig. 3, a non-range effective clause may be goal-intransitive and may or may not take a beneficiary complement (beneficiary effective, non-beneficiary effective). With the "beneficiary effective" feature it has a "beneficiary-transitive" option (*she promised (me)* is non-range effective, goal-intransitive, beneficiary effective, and beneficiary-transitive if the beneficiary complement *me* is present. If a non-effective range clause is goal-transitive, it again may or may not take a beneficiary complement ((non) beneficiary effective in operative 2). A beneficiary effective clause then is either beneficiary-transitive or beneficiary-intransitive as in *she washed (John) the clothes*. This latter clause is goal-transitive 3 with goal complement *the clothes* and may be beneficiary-transitive 2 with beneficiary complement *John*.

non-range effective in operative

- goal-intransitive 3
  - beneficiary effective in operative 1
    - beneficiary-transitive 1
      she paid John
    - beneficiary-intransitive 1
      she promised (me)
  - non-beneficiary effective in operative 1
    she washed (the clothes)
- goal-transitive 3
  - beneficiary effective in operative 2
    - beneficiary-transitive 2
      she washed John the clothes
    - beneficiary-intransitive 2
      she washed the clothes
  - non-beneficiary effective in operative 2
    he praised the idea

figure 3

Below is a summary of effective, operative clauses:

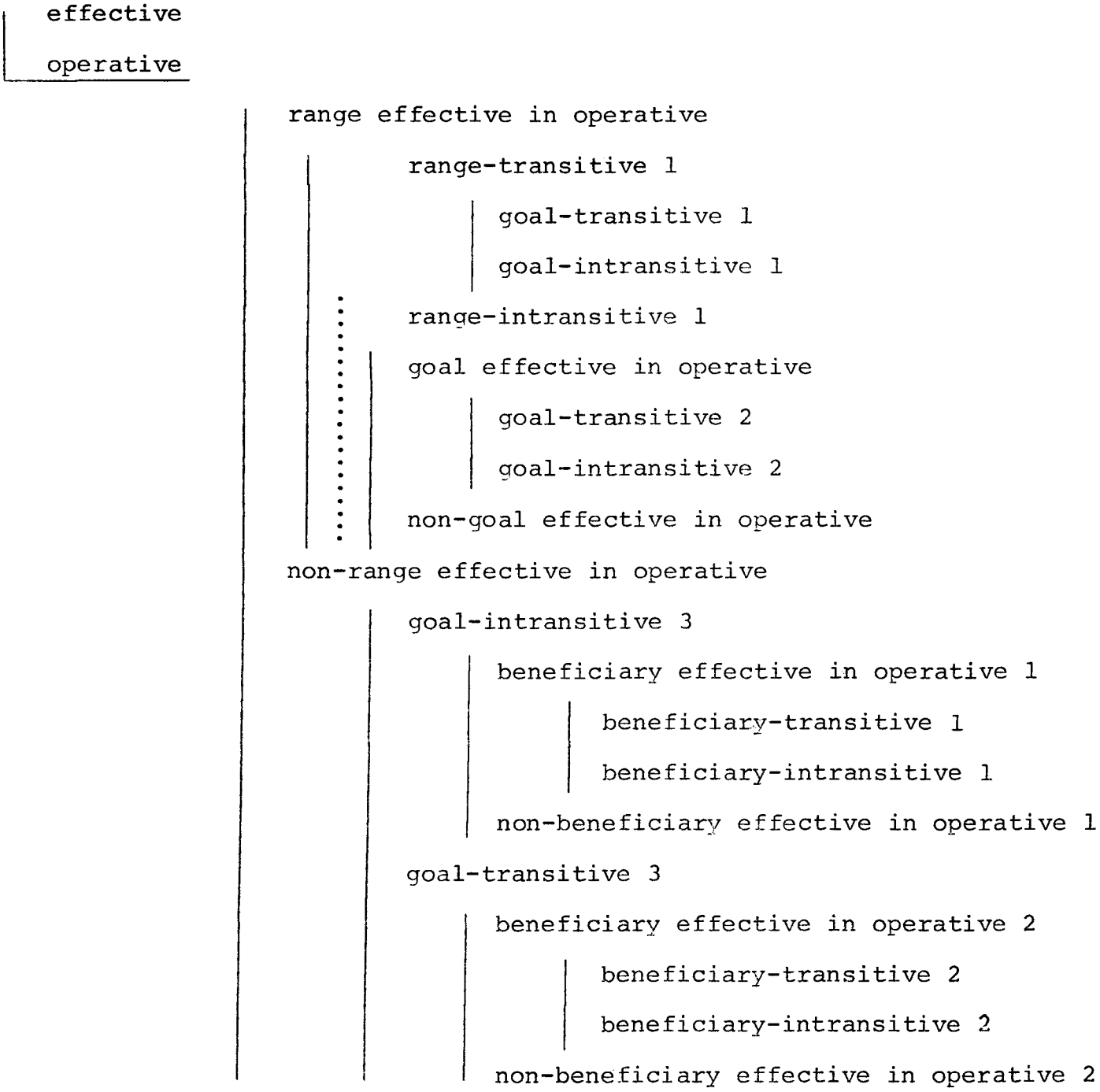

effective
operative
range effective in operative
range-transitive 1
goal-transitive 1
goal-intransitive 1
range-intransitive 1
goal effective in operative
goal-transitive 2
goal-intransitive 2
non-goal effective in operative
non-range effective in operative
goal-intransitive 3
beneficiary effective in operative 1
beneficiary-transitive 1
beneficiary-intransitive 1
non-beneficiary effective in operative 1
goal-transitive 3
beneficiary effective in operative 2
beneficiary-transitive 2
beneficiary-intransitive 2
non-beneficiary effective in operative 2

figure 4

In terms of the previous analysis, an effective, middle clause needs no further specification. A clause of this type is *she washed (herself)*.

The next step in the transitivity expansion is to alter Halliday's analysis of effective, receptive clauses. In clauses of this type, the subject may be either a range, goal or beneficiary, feature diagrammed respectively:

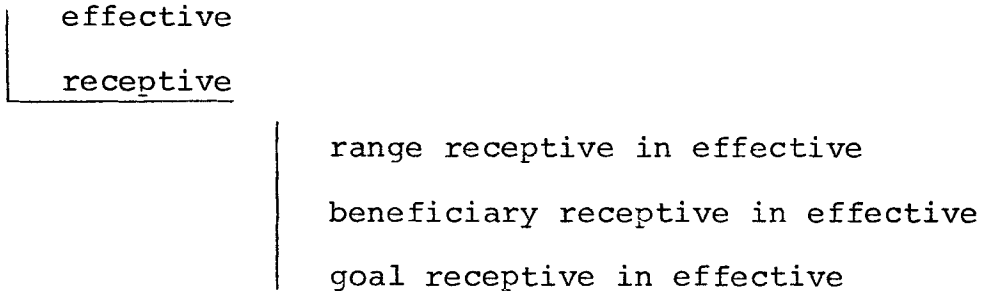
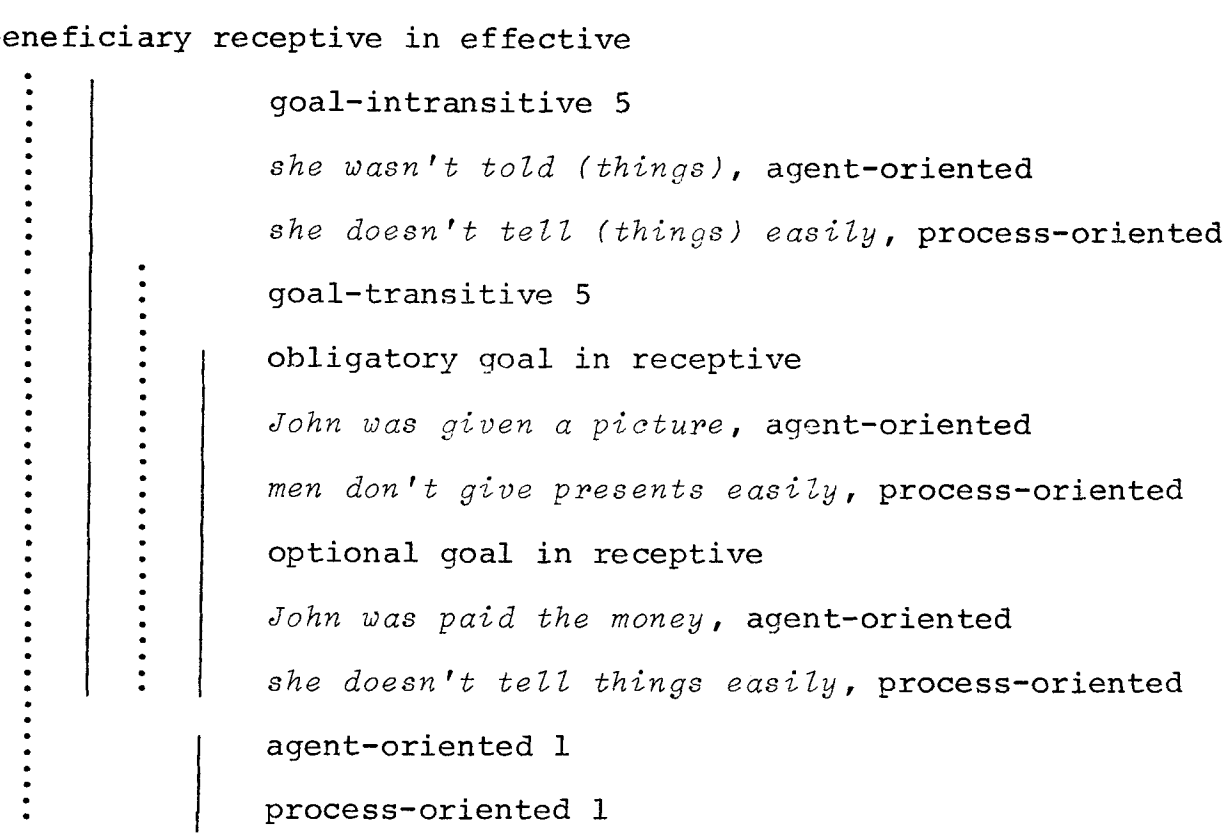


figure 5

A clause with a range subject then may have a "goal-(in)transitive" feature (*five shillings were charged (John)* is range receptive in effective with range subject *five shillings*, and may be goal-transitive with goal complement *John*).

In fig. 6, a beneficiary receptive clause may be goal-intransitive (*she wasn't told (things)*) or have a goal complement that may or may not be obligatory (features "obligatory goal", "optional goal" respectively). Beneficiary clauses of the latter two types can be agent-oriented or process-oriented. *John was paid the money* is a goal-transitive, optional goal, agent-oriented clause with goal complement *the money* and beneficiary subject *John*, while *men don't*

give presents easily (meaning that it is difficult to give men presents) is goal-transitive, obligatory goal and process-oriented with goal complement *presents*.



NOTE: The feature written next to an example is the one appropriate from the second of the two simultaneous sub-systems of beneficiary receptive in effective clauses.

figure 6

Goal receptive clauses (fig. 7) have predicates that may or may not take range complements (features respectively, "range effective", "non-range effective"). Range effective clauses are either range-intransitive (*John was charged (five shillings)* has goal

subject *John* but lacks range complement *five shillings*), or range-transitive with an obligatory or optional range. *The paint was given a stir* has features "range-transitive" and "obligatory range", with range complement *a stir* and goal subject *the paint*. *John was charged five shillings* is a goal receptive, range effective, range-transitive clause with optional range complement *five shillings*. Non-range effective clauses again are either agent-oriented or process-oriented and can be beneficiary effective or non-beneficiary effective depending on whether or not they may have a beneficiary as complement. Beneficiary effective clauses then have features "beneficiary-(in)transitive". *The picture was given John* is non-range effective, beneficiary effective, beneficiary-transitive and agent-oriented with goal subject *the picture* and beneficiary complement *John*, while *the picture was painted* is non-range effective, non-beneficiary effective and agent-oriented, with goal subject *the picture*. Process-oriented clauses are: *these things don't tell (old people) easily, these ties don't sell everybody, the clothes washed*. In the first of these clauses, *old people* is a beneficiary complement and *these things* is a goal subject. In the second, *everybody* is the beneficiary complement and *these ties* is the goal subject.

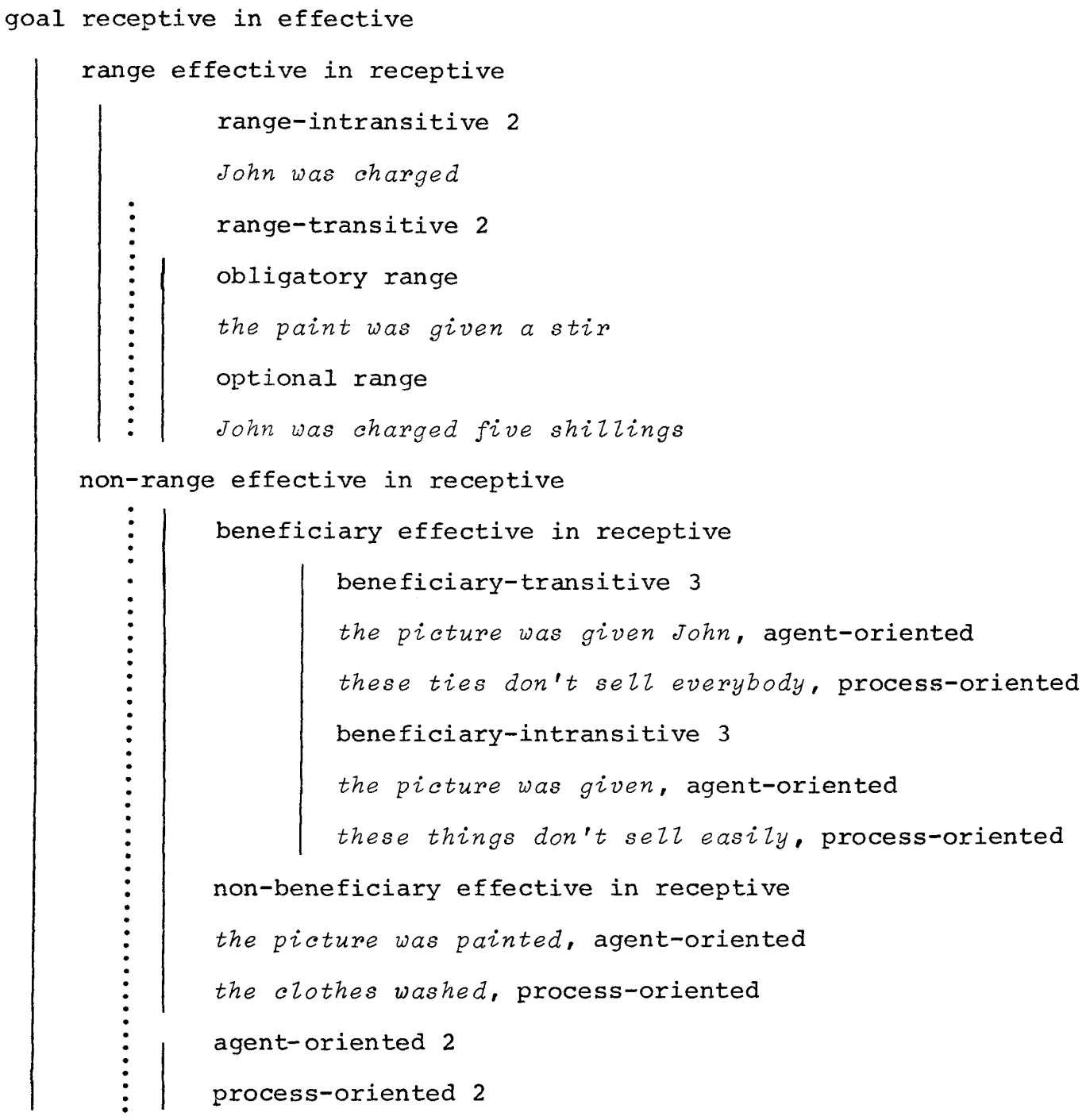


figure 7

A complete feature system network for effective, receptive clauses follows:

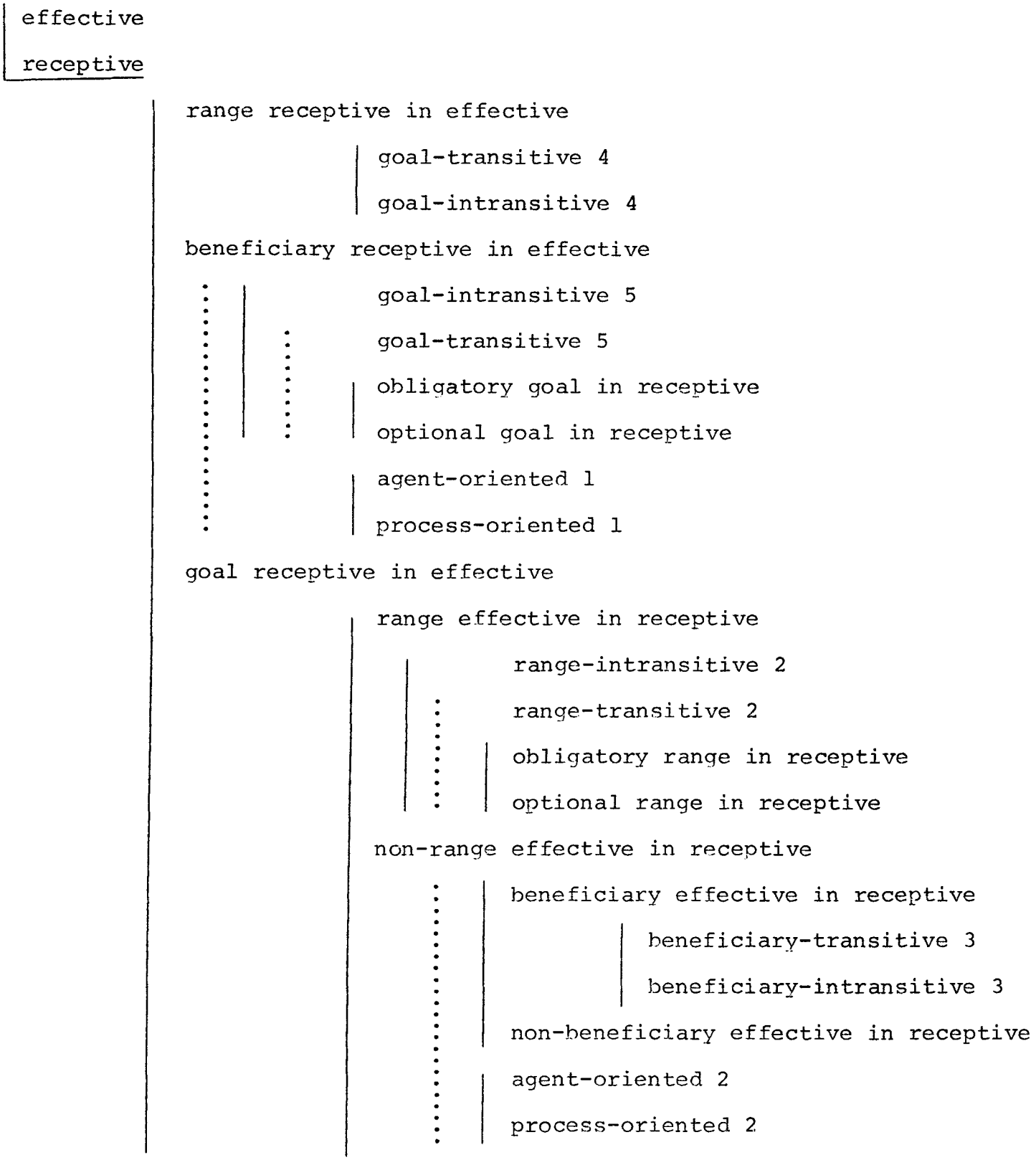

effective
receptive
range receptive in effective
goal-transitive 4
goal-intransitive 4
beneficiary receptive in effective
goal-intransitive 5
goal-transitive 5
obligatory goal in receptive
optional goal in receptive
agent-oriented 1
process-oriented 1
goal receptive in effective
range effective in receptive
range-intransitive 2
range-transitive 2
obligatory range in receptive
optional range in receptive
non-range effective in receptive
beneficiary effective in receptive
beneficiary-transitive 3
beneficiary-intransitive 3
non-beneficiary effective in receptive
agent-oriented 2
process-oriented 2

figure 8

The next step in the extension of the transitivity analysis would be a reconsideration of descriptive, operative clauses like *he marched the prisoners*. But these will not be specified further here.

The descriptive, middle clauses (fig. 7) can be range-intransitive or range-transitive. The latter feature is accompanied by a system distinguishing between neutral process (*did* in *she did a dance*) and non-neutral process (*sang* in *she sang a song*), and by a system with features "objectifiable range" and "non-objectifiable range". The latter two features indicate respectively whether or not the predicator is capable of having a cognate range which can take a beneficiary. Thus *she sang (John) a song* is range-transitive, non-neutral process and objectifiable range. The last feature appears since the range complement *a song* permits the presence of a beneficiary complement *John*. It follows that the "objectifiable range" feature is interpreted further by features "beneficiary-(in)transitive". Note that only those descriptive, middle clauses with feature "range-transitive" are capable of having the feature "neutral process". "Neutral process" feasibly could have been replaced by a term like "obligatory range in middle". The range element is obligatory since the verb plays the role of carrier for it (see Halliday [1], section 2).

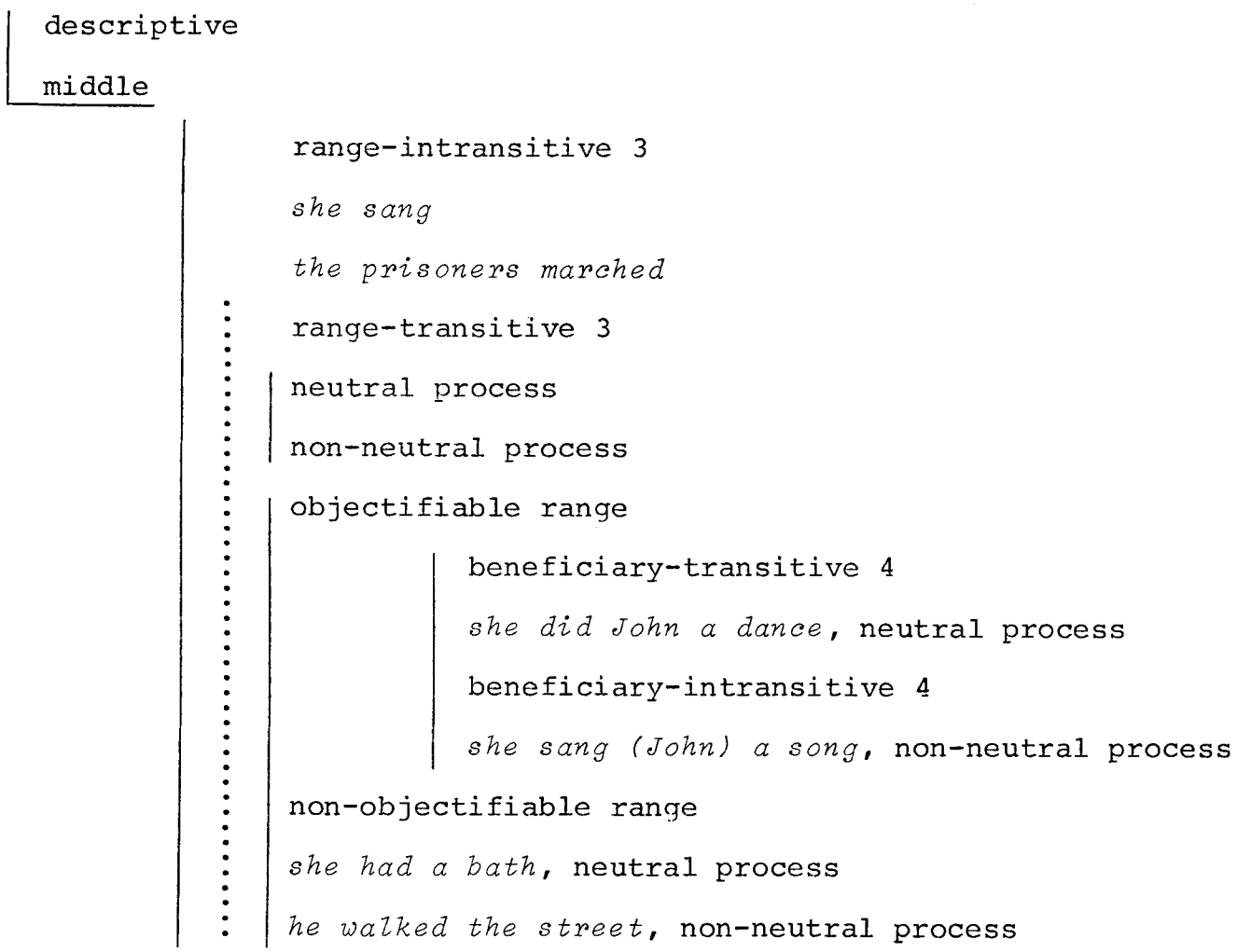


figure 9

The descriptive, receptive clauses need be analyzed only at one more level of delicacy which indicates whether the subject is actor, goal or beneficiary. Below, the added features are shown respectively.

descriptive

receptive

actor receptive in descriptive

the prisoners were marched

range receptive in descriptive

the song was sung

the mountain was climbed

beneficiary receptive in descriptive

John was sung a song

figure 9.5

The last step in the transitivity expansion is consideration of a more delicate analysis of the "intensive" feature in fig. 0. An intensive clause can have a predicator that may take a beneficiary complement (feature "beneficiary intensive") as in the clauses *she made (him) a good wife* and *it cost John five shillings*. In the first of these *a good wife* is the attribute and *him* is the beneficiary complement. For the second clause, *five shillings* is the attribute and *John* is the beneficiary complement. Intensive clauses can also have predicators that cannot take such a beneficiary (*she looked happy*). The intensive feature network becomes:

intensive

- beneficiary intensive
  - beneficiary-transitive 5
    she made him a good wife
  - beneficiary-intransitive 5
    it cost five shillings
- non-beneficiary intensive
  she looked happy

figure 10

The purpose of this transitivity expansion is to single out those feature combinations involving beneficiary complements and subjects. Based on the series of diagrams presented, it can be seen that up to a certain level of delicacy there exist five different feature selections involving a beneficiary complement. These are those selection expressions that include the feature "beneficiary-transitive n". Similarly, the two features containing information about the existence of a beneficiary subject are "beneficiary receptive in effective" and "beneficiary receptive in descriptive". It is the objective of the second part of this paper to consider the compatibility of those selection expressions containing the seven above mentioned features, with those selection expressions derived from the beneficiary system network to be presented.

The beneficiary role does not necessarily imply that an element benefits in the usual sense of the term. In *he gave John poison*, *John*

is a beneficiary which may benefit negatively from the action. If "beneficiary affected negatively" is a possible feature for a beneficiary system network, then its actual selection for a clause analysis is not independent either of process or of other participants in the process. If information concerning possible beneficiaries in a process is associated with the constituent denoting process, then a clause analysis may enter a beneficiary network feature with or without an outcome of compatibility between the structure analysis and the features associated with all constituents. The "degree of benefit" distinction can be incorporated into the beneficiary network as one of two simultaneous systems.

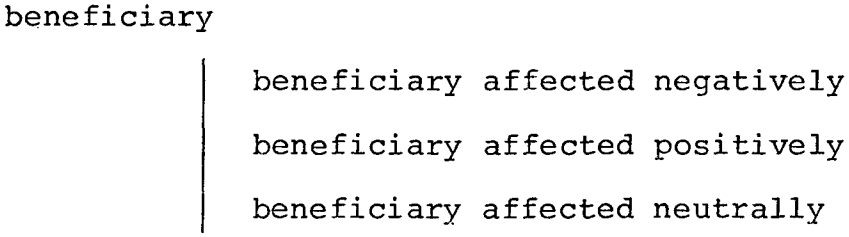
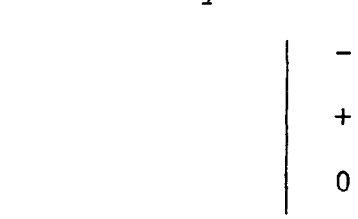


figure 11

In shorthand notation this system becomes:



The second of the two simultaneous systems distinguishes among beneficiaries that can be affected by directed action, non-directed action and attribution.

beneficiary

- D beneficiary affected by the results of a directed action
- N beneficiary affected by the results of a non-directed action
- A beneficiary affected by attribution

figure 12

It will be shown that the selection of these beneficiary features is dependent on information about clause process and participant roles. A candidate for a beneficiary complement eventually will be rejected if the features associated with the other clause entities do not permit compatibility of, for example, goal, process and beneficiary.

The beneficiary affected by directed action will be considered first. This participant can be a potential receiver of or a sensor of a specific entity, or can be a benefiter of a directed action without receiving or sensing a specific entity. Fig. 13 details the network for the former feature where the letter strings are a short-hand code.

E potential receiver of or direct sensor of a specific entity

- RE receiver of entity
  - CR beneficiary capable of continuous receiving
  - DR beneficiary capable of discrete receiving
- SE sensor of entity
  - CS beneficiary capable of continuous sensing
  - DS beneficiary capable of discrete sensing
- AC entity requires actor for its creation
- NAC entity does not require actor for its creation
- AS entity requires actor for its existence
- NAS entity does not require actor for its existence
- CO entity is concrete object
- AB entity is abstract object which is not a change of state or nominalized action
- PCS entity is physical change of state
- NPCS entity is non-physical change of state
- NA entity is nominalized action

figure 13

The manner in which this network is presented results directly from the fact that beneficiaries having the above entry feature normally combine with the inherently beneficiary processes such as: *give*, *show*, *sell*, *pay*, *owe*, *pass*, *throw*, *hand*, *keep*, *offer*, *promise*, *tell*. In some of these processes, the beneficiary is a participant which is a potential receiver of the entity in question, but in the case of processes such as *tell* or *show*, knowledge of the entity is

directly sensed. In clauses like *John was paid (the money)* and *loyalty is owed some recognition*, the beneficiaries *John* and *loyalty* are respectively, a receiver of the concrete object *the money* and a potential receiver of the nominalized action *recognition*. In the clause *she washed John the clothes*, neither of these cases is implied. The following are example clauses, with underlined beneficiaries, having selection expressions from the portion of the beneficiary network presented up to this point:

John was paid (the money) +,D,E,RE,DR,NAC,NAS,CO

write John 0,D,E,RE,DR,AC,NAS,CO

she gave John happiness +,D,E,RE,CR,NAC,NPCS

he gave the door a coat of pint +,D,E,RE,CR,AC,NAS,PCS

loyalty is owed some recognition +,D,E,RE,CR,AC,AS,NA

he expressed me his opinions 0,D,E,SE,CS,AC,NAS,AB

he gave her a smile +,D,E,SE,CS,AC,AS,NA

he gave him freedom +,D,E,RE,DR,AC,NAS,NPCS

he gave her a hairdo +,D,E,RE,DR,AC,NAS,PCS

he gave them religion +,D,E,RE,CR,NAC,NAS,AB .

A beneficiary affected by the results of a directed action may also "benefit" without receiving or sensing a specific entity. Examples of these clauses are *she washed John the clothes* and *John was dedicated a building*. A further distinction can be made in the network:

NE benefiter of directed action, not potentially receiving or directly sensing a specific entity

- GC beneficiary affected by goal's creation or change of state
- GE beneficiary affected by goal's existence

figure 14

The two clauses above have, respectively, feature selections:

+,D,NE,GC

+,D,NE,GE .

Figure 12 is expanded further by an analysis of beneficiaries affected by the results of a non-directed action. Clauses with this feature may have beneficiaries which sense the action (*she did John a dance, she sang John a song*) or do not (*he said her a prayer*):

N beneficiary affected by the results of a non-directed action

- SA sensor of action
- NSA non-sensor of action

figure 15

Lastly, the beneficiaries affected by attribution can be more delicately analyzed. The attribuant may be animate or inanimate, and the attribute may be a role or a characteristic. In addition, the effect is continuous or discrete:

A beneficiary affected by attribution

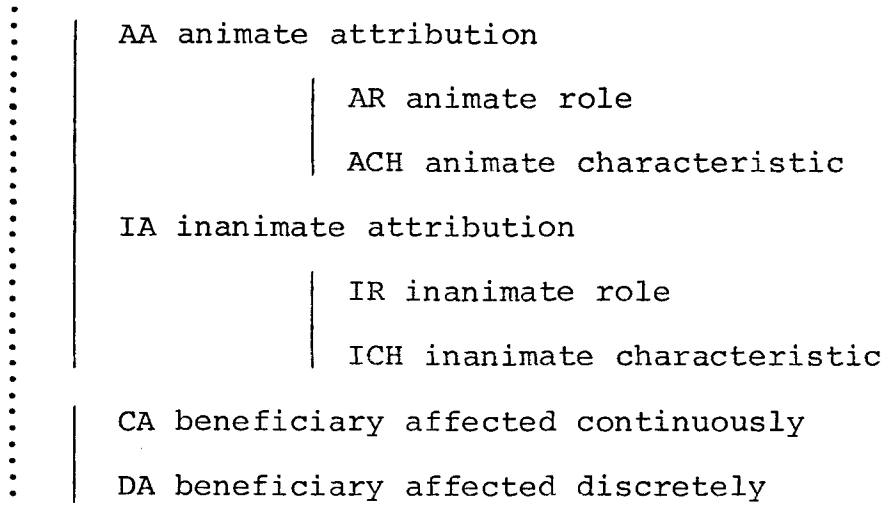


figure 16

Examples having these features are:

she made him a good wife +,A,AA,AR,CA

the mistake cost him dear -,A,IA,ACH,CA

he made the cannibals a good meal +,A,AA,AR,CA .

The entire beneficiary network is summarized in figure 17.

B beneficiary

- beneficiary affected negatively
- + beneficiary affected positively
- 0 beneficiary affected neutrally
- D beneficiary affected by the results of a directed action
  - E potential receiver of or direct sensor of a specific entity
    - RE receiver of entity
      - CR beneficiary capable of continuous receiving
      - DR beneficiary capable of discrete receiving
    - SE sensor of entity
      - CS beneficiary capable of continuous sensing
      - DS beneficiary capable of discrete sensing
    - AC entity requires actor for its creation
    - NAC entity does not require actor for its creation
    - AS entity require actor for its existence
    - NAS entity does not require action for its existence
    - CO entity is concrete object
    - AB entity is abstract object which is not a change of state or nominalized action
    - PCS entity is physical change of state
    - NPCS entity is non-physical change of state
    - NA entity is nominalized action
  - NE benefiter of a directed action, without receiving or sensing a specific entity
    - GC beneficiary affected by goal's creation or change of state
    - GE beneficiary affected by goal's existence
- N beneficiary affected by the results of a non-directed action
  - SA sensor of action
  - NSA non-sensor of action
- A beneficiary affected by attribution
  - AA animate attribution
    - AR animate role
    - ACH animate characteristic
  - IA inanimate attribution
    - IR inanimate role
    - ICH inanimate characteristic
  - CA beneficiary affected continuously
  - DA beneficiary affected discretely

figure 17

The final stage of this project is to combine the beneficiary system network and transitivity system network by means of specific rules. A feature denoting the existence of a beneficiary can be thought of as being simultaneous with an entry feature to a portion of the beneficiary network that is compatible with the transitivity features preceding the benefactive transitivity feature.

(1) Beneficiaries in clauses with features "beneficiary-transitive 1" or "beneficiary-transitive 3" (figs. 3,8) may have any degree of benefit and are potential receivers of or direct sensors of a specific entity. These beneficiary transitivity features are not compatible with NE beneficiaries since one cannot say, for example, "the clothes were washed John" or "the picture was painted John".

(2) The "beneficiary-transitive 2" (fig. 3) and "beneficiary receptive in effective" (fig. 6) features imply the existence of a beneficiary affected to any degree by the results of a directed action.

(3) Beneficiary-transitive 4 and beneficiary receptive in descriptive beneficiaries (figs. 9,9.5) are affected by the results on a non-directed action.

(4) Beneficiary-transitive 5 beneficiaries (fig. 10) are affected by attribution.

The structure of more detailed rules is dependent upon the specification of actor, initiator, range, goal and attribute feature system networks. The techniques in this paper may be employed in the construction of the other participant networks, and the networks for the circumstances of the process. The interrelationships of these roles will appear in the features of each network and these features will be the basis for the determination of the compatibility of all portions of the networks involved.

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